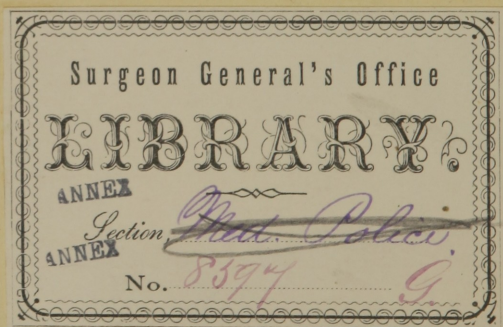


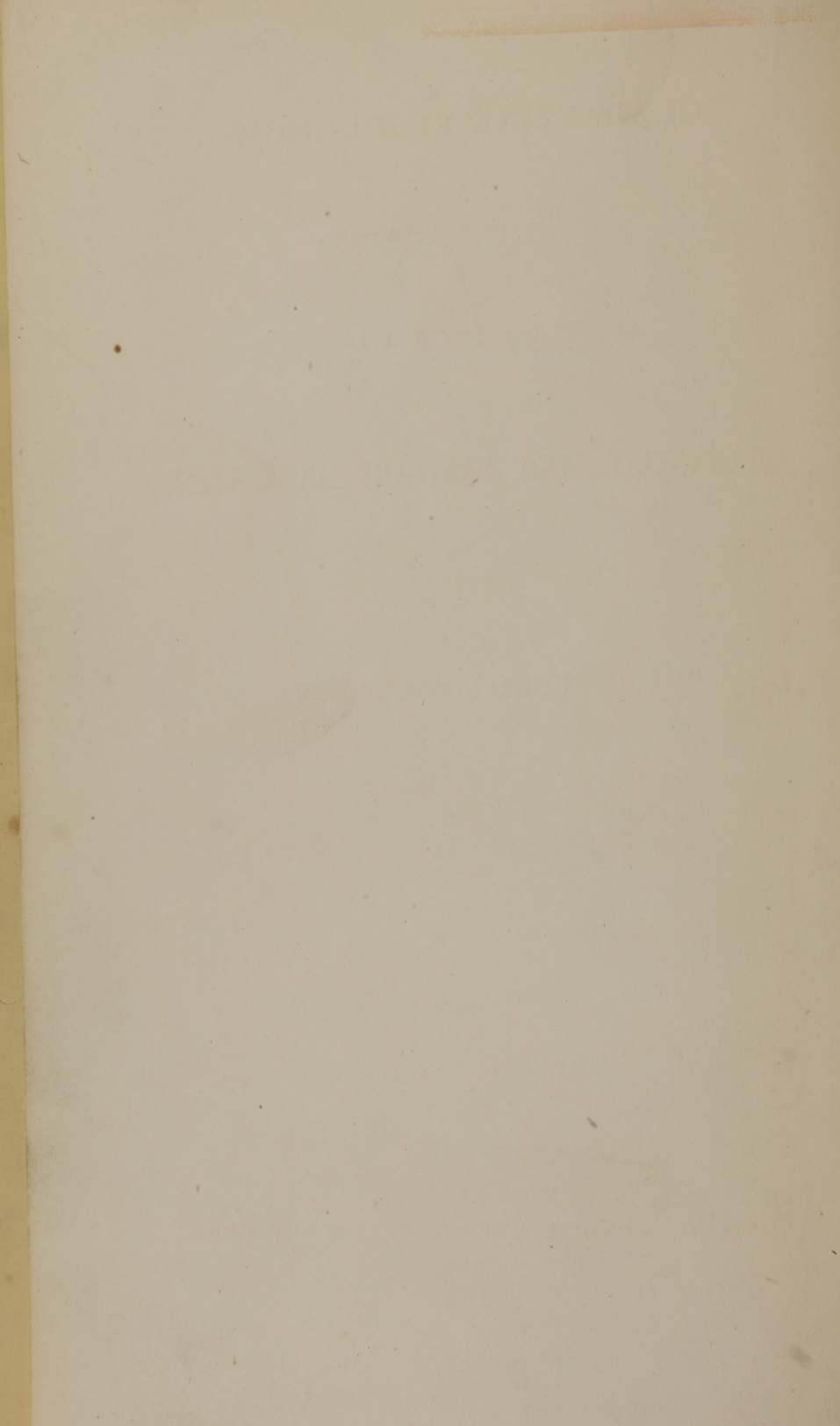
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QUARANTINE REGULATIONS.

To
Mr. Surgeon-General
U. S. Army

Wm. Ryland of
E. Harris. }





QUARANTINE REGULATIONS

AS APPROVED BY THE

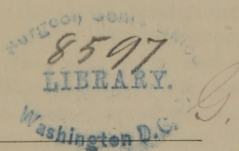
N A T I O N A L

QUARANTINE AND SANITARY ASSOCIATION

OF THE

UNITED STATES.

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QUARANTINE REGULATIONS.

AT the Third National Quarantine and Sanitary Association, held in New York, April, 1859, the following Resolutions were adopted, and the undersigned were appointed a Committee in accordance therewith :—

Resolved, That the operations of quarantine should not be confined to the warm months of the year; inasmuch as a vessel, arriving in midwinter, with smallpox or typhus on board, is as legitimate a subject for quarantine as one arriving in midsummer.

Resolved, That the adoption, by the commercial nations, of a sound and well-digested code of marine hygiene, and of the necessary measures for insuring its strict enforcement, would tend greatly to alleviate the evils of the present system of quarantine, and promote the comfort of passengers and crew.

Resolved, That this Convention appoint a Committee to consider and report in what manner the foregoing resolutions may be most effectually carried out.

Resolved, That the Committee report, at the next meeting of this Convention, (in Boston, June 14, 1860,) specific recommendations of principles and measures of quarantine, as severally applicable to yellow fever, cholera, typhus fever, and smallpox, having reference also to the variations which different localities require.

The Committee, to whom the above resolutions were referred, have taken much pains to obtain all the information possible on the subjects to which they relate; and they are under lasting obligations to the Honorable LEWIS CASS, Secretary of State, and to the Honorable JOHN APPLETON, Assistant Secretary of State, for the procurement of printed copies of the quarantine regulations of the principal commercial nations; also to the Health Officers of the chief seaports of the United States, for the health regulations and ordinances which have been, or are now, in use in our own country. From these and some other resources, the Committee on External Hygiene have had abundant means for appreciating the Quarantine Regulations of different nations and places, and of comparing them together in such a manner as to promise a fair prospect of presenting a code of marine hygiene applicable to all the varying circumstances of commerce.

The strongest evidence of human progress is the conquest of science over error and superstition. When, in 1831, the cholera left India for a tour of Europe, after having travelled over the continent of Asia, every government it approached essayed to put a stop to its progress

by the powers of quarantine. Equally vain were the like forces on the continent of America. The cholera rode over all quarantine restraints, — bid defiance to all such antiquated barriers. About this same period of time, CHERVIN, the great student of yellow fever, was battling against the quarantine ordinances of France, as worse than useless for the protection of the French frontiers against this disease; and the triumph of cholera over the quarantine which was to keep out yellow fever, was regarded by Chervin as a strong argument in favor of his views against quarantine, — for the abrogation of the odious ordinance of 1822. Confidence in quarantine regulations for the prevention of plague was also forfeited in a great degree by frequent recurrences of that disease in places the most rigidly guarded, whilst other places, exempt from stringent quarantine regulations, were free from this much-dreaded disease.

The conquest of Algeria by the French placed the government of that country under the necessity of reducing, from time to time, the burdens of quarantine which had been previously imposed, even when the States of Barbary were free from the plague. These reforms, however, were strenuously opposed, particularly by the sanitary authorities of Marseilles, who had been for a long time accustomed to exercise the most arbitrary powers in this regard; also by the Health authorities of Italy, who went so far as to accuse France of opening the port of Marseilles to the plague.

In spite of these oppositions, however, reform steadily advanced. Two Commissions confided to M. de Ségur Dupeyron, the Inspector of Quarantine, who, though a contagionist, clearly displayed in his reports the vices and incoherences of the system; a collection of the published opinions of many men distinguished in science, by M. Aubert-Roche; the exemption experienced by the French mail-boats; and, finally, the remarkable report of the Academy of Medicine, of Paris, upon the plague and quarantines, — all concurred in the propriety of a complete reform.

On the 18th of August, 1847, a royal ordinance of France declared the first recognition of truths based upon the opinions of medical men, that many of the restrictions of quarantine were unnecessarily burdensome, and therefore abolished. Still other reforms were established by decrees, on the 10th of August, 1849, and on the 10th of December, 1850. But it was not enough for the eminent sanitarians of France to have accomplished a reform in their own country, and for their own commercial ports; this was only a beginning of the work. They proposed to show that it was to the interest of the commerce of other nations to accept the reforms which they had effected for France. And Dupeyron suggested to the Ministers of Commerce the idea of a Sanitary Congress, formed by delegates from the divers powers having seaports on the Mediterranean. The Government adopted his opinion, but, on attempting negotiations, failed in accomplishing its intended purpose.

In 1850, M. Mêlier, member of the consulting committee on public hygiene, renewed the proposition of Dupeyron, and with more success. Mêlier submitted a programme, which was agreed to by all the govern-

ments interested; and a convention was formed by delegates from France, England, Austria, Spain, the Two Sicilies, the Roman States, Greece, Portugal, Russia, Sardinia, Tuscany, and Turkey. This convention soon after met in Paris, and, after long discussion, proposed an international code of quarantine laws, which has since been ratified by the nations represented; and this code is now observed in all the ports of the Mediterranean. Meanwhile, the sanitary reform, which began in England about twenty years ago, under the provisions of the "New Poor Law," attacked no less vigorously the ancient fallacies of quarantine, which had been in vogue in that country since the Great Plague of 1666. The General Board of Health, instituted by an Act of Parliament in 1848, persisted in repeated efforts against the quarantine regulations, for plague, cholera, and yellow fever; protesting that protection from pestilential disease does not consist in quarantine regulations, but in *internal sanitary measures*, that is to say, in measures which have for their object the suppression and prevention of conditions without which the diseases regarded as quarantinable would not exist. The industry, the boldness, and the enthusiasm of Chadwick, of Guy, of Southwood Smith, of Duncan, of Ferrier, of Currie, of Toynbee, of Milroy, and others of like stamp, astounded the United Kingdom, and astonished the world by reports which implied accessory murder of thousands of human beings, by the very authorities whose office it should be to protect them.

The measures proposed by the General Board of Health were the destruction of *fomites*, — all sources of infection in town and country; sanitary improvement of habitations; a full supply of wholesome water and wholesome food, — extending to the *personnel* and *materiel* of commerce. — and, finally, if, in spite of these precautions, pestilence manifests itself in any place, abandonment of the locality until the cause of the pestilence is found out and eradicated. These theories, though for a long time silently believed in by many physicians of eminence, were now for the first time openly proclaimed, and pressed upon the authorities as the only safeguards against the recurrence of appalling epidemics. And when the first International Sanitary Convention met in Paris, in 1850, the delegates from France had already a well-matured programme as a basis of discussion; — the chief feature of the Convention was the abrogation of useless quarantine restrictions, and the inculcation of municipal hygiene in their stead.

However lamentable the devastations of cholera, since its exodus from India, in 1831, it is to our better acquaintance with the habitudes of this disease that the commercial world is indebted for the progress already made, in the removal of pernicious influence to health, and restrictions burdensome to commerce and navigation. Quarantine reform has been a prominent feature in the sanitary improvement of Europe for nearly thirty years, and it is with chagrin that your Committee on External Hygiene, after diligent investigation, finds that the quarantine regulations of the United States are nearly identical with the most odious restrictions of Europe thirty years ago. They are, in effect, the same laws as those imposed by England, in colonial times, for the protection of America from "plague or other

malignant distempers," and in several of the States it yet remains an indictable offence, with a large penalty, for any person to come into the State from any place infected with contagious disease. The quarantine laws still presume that certain diseases are communicable from the sick to the well, under all circumstances, and that such diseases are capable of being transmitted to new and distant localities, independent of all conditions. They also presume that the germs of all diseases regarded by quarantine officials as contagious or infectious, may lie dormant in the systems of persons who are apparently well, but who may afterwards sicken, and then become the radiating centres of infection. Based upon these conclusions, the *time* and *duration* of Quarantine pretend to depend upon the real or suspected presence of the apprehended disease, in the *personnel* of any vessel during the voyage and at the time of arrival, the kind of cargo, and whether there has been any communication with other vessels, persons, or things, during the voyage. These requirements, however, are of short duration, and usually limited to the warm season of the year. This *résumé* is a fair representation of the Quarantine regulations of the United States, while there are no exceptions to the incongruities herein stated.

It has been justly remarked by McCulloch, in his Commercial Dictionary, that "the complaints of quarantine grievances and oppressions are almost wholly occasioned by want of proper facilities for its performance." But, while we may properly admit the truth of this assertion, as applicable especially to the view which commercial men must naturally take of this subject, we think it must appear to scientific observers that the defective facilities to which McCulloch has referred are mainly owing to the prevailing indefiniteness of opinions and official practices relating to quarantine and to febrile infections. As medical men, therefore, your Committee frankly acknowledge that the medical profession, and quarantine officers themselves, are partly responsible for the defects of our external sanitary defences.

Before enumerating the points which we believe to be essential to the provision and perfection of the external sanitary system of maritime cities and large commercial towns, your Committee would briefly note the special defects and wants that are acknowledged to exist in all, or at least most, of the ports in the civilized world.

- I. THE DEFECTS THAT RELATE TO THE SICK AND TO SANITARY PROTECTION.
- II. THE DEFICIENCIES THAT RELATE TO COMMERCIAL TRANSACTIONS AND PUBLIC CONVENIENCE.

Under the *first* head are included : 1st. Hospitals,—their location, construction, and fitness ; the facilities for the reception, distribution, and care of the patients. 2d. The construction and management of docks and warehouses for quarantine purposes, with reference to sanitary protection.

Under the *second* head we enumerate : 1st. The needless delay of vessels. 2d. The unnecessary detention of cargoes. 3d. the damage to such cargoes and vessels at Quarantine. 4th. The inconvenience and expense of lighterage. 5th. Loss of time and the use of vessels.

As all these points under the *second* head are connected with the general question of quarantine docks and warehouses,—their location, capacity, and special adaptation,—it is manifestly right, and eminently proper, that the interests and requirements of commerce should be provided for, and made perfectly consistent and harmonious with all the conditions and provisions which are necessary for the protection of the public health. These points include the grounds upon which objections are made respecting deficient facilities as well as burdensome restrictions of quarantine establishments. We propose to make a fair and full statement of the points, without attempting their discussion. But we feel warranted in making the following general statement, involving all these points incidentally, and at the same time affirming what is conceded to be necessary to the arrangement of a quarantine establishment.

I. — THE SICK.

Humanity and public policy alike demand that, wherever there is a quarantine establishment, or wherever and whenever there is any detention of vessels and the sick, in the nature of quarantine, there, in the immediate vicinity of the quarantine anchorage, should be provided ample facilities for the proper care of all such cases of disease as may not, with safety to the public and to the patients, be removed to more suitable places.

The nature and extent of hospital provisions required at any quarantine station must be in no small measure dependent upon the nature and extent of hospitals, and the internal sanitary arrangements of the city or place requiring a quarantine establishment.

For the welfare of the sick it is required that the location of the hospitals should be within a convenient distance of the quarantine station, and that the facilities of access to them from the quarantine anchorage be such as to secure the greatest safety to the sick, and the least danger to the public; and lastly, such location, distribution, and special management of the sick, as shall prevent the general contamination of the hospital in which they may be placed for treatment, and also preclude liability to any dangerous exposure to subsequent infection, or to any other unhealthy influences.

Both the public safety and the welfare of the sick in hospitals, require that effectual provisions be made for the immediate and thorough disinfection of all baggage and personal clothing liable to infection.

II. — QUARANTINE DOCKS AND WAREHOUSES.

If it is admitted that the security of the public health against certain diseases demands the protracted detention or exclusion of vessels or cargoes that are liable to convey and propagate those diseases, then it may justly be claimed that the interests of commerce require special

docks and warehouses for that class of quarantined vessels and cargoes, while experience has fully demonstrated the great importance of such special facilities, no less for public safety than for commercial convenience.

To illustrate the nature and extent of the deficiencies of quarantine establishments, we would refer to the statements on this subject as embodied in the Report on External Hygiene, adopted by this Convention last year.* We would also mention the testimony given on the same subject, particularly as regards deficient provisions for the sick, by the British Quarantine Commissioners, in their First Report.† And in regard to the testimony respecting those special deficiencies that embarrass commerce and incommode the public, it is painfully evident that the judicious author of the Commercial Dictionary speaks truly when he asserts that, were the proper facilities afforded to enable merchants and others to comply with quarantine and all needed external health regulations, "the burdens it (quarantine) imposes would be comparatively light, and we do not know that many more important services could be rendered to the country than by constructing a proper quarantine establishment." Continuing his remarks on this subject, Mr. McCulloch states "there is not on the Thames a lazaretto where a ship from a suspected place may discharge her cargo and refit, so that it is detained, frequently at an enormous expense, during the whole period of quarantine."

This statement, which applies to ports that less than almost any other large maritime cities require such special external sanitary provisions, has been strongly corroborated by the testimony of boards of trade and chambers of commerce in the principal ports of both America and Europe.

As respects medical and official testimony, generally, we find none more decided than that adopted by this Convention at its last session, in answer to the question, "What reforms are required to make quarantines more efficient and less burdensome?" In that report it is stated that "we must be prepared to denounce, as worse than useless, every system of quarantine which, either from incorrectness of the principles upon which it is founded, or from the careless and inefficient manner in which it is executed, as inadequate to guard the community against the introduction of disease from abroad."

The Quarantine Commissioners of Great Britain, in their first report to the General Board of Health, in 1848, concisely sum up the deficiencies and objections of British quarantines, by stating that "the Quarantine establishments of this and every other country, of which we have information, are *wholly insufficient*, even on the assumption on which they have hitherto been maintained, to prevent the introduction and spread of diseases.

"That these establishments are of a character calculated to inflict on passengers extreme and unnecessary inconvenience, and to sub-

* See Report of Convention, 1859, pp. 321, 322, *et seq.*

† See First Report of the Quarantine Commissioners to the General Board of Health of Great Britain, pp. 73-76.

ject such of them as may be sick to increased suffering and danger, while they maintain false securities in relation to the means of preventing the spread of disease."

(By vote of the Convention, it was resolved "that the Report of the Committee upon the Utility of Wet Docks in Connection with Quarantines be referred to the Committee on External Hygiene, with powers.")

"The Committee to whom, at the Third National Quarantine and Sanitary Convention, the Resolution, that a Committee be appointed to inquire into the propriety and usefulness of enclosed wet docks on the Atlantic coast and Gulf of Mexico, together with the requisite Lazaretto for the protection of vessels and merchandise, and the care of the sick subject to Quarantine, the same to be placed under the charge and jurisdiction of the United States," was referred, in presenting their Report, beg leave to premise that —

WHEREAS, The statements which will appear in the sequel have been in a great measure derived from personal observation, it will be necessary to allude very frequently to the Quarantine at New York, as it is not improbable that many of the defects in that establishment have existed in others of a similar kind, and should no appropriate measures be adopted to obviate them, may appear again.

Since the organization of Quarantines, we will venture to say that in no part of the globe, in an equal space of time, have so many sick persons been admitted into a Quarantine Hospital, or Lazaretto, as there have been into the Marine Hospital at New York.

According to the report of Dr. Bissell, an ex-physician-in-chief of the Marine Hospital, to the Legislature of New York, for the year 1857, there were admitted into said Hospital, from the year 1798 to 1857, inclusively, a period of sixty years, 72,595 patients, of which number 10,493, a seventh part, died. During the period embraced by the years 1848 and 1853, at which time the Reporter was one of the physicians of this hospital, 35,690 of the above aggregate were admitted, — nearly one half of the whole number in one tenth part of the time. Hence he has had an unusual opportunity of witnessing much of the inconvenience and suffering, as well as many of the defects of a Quarantine establishment, some of which will be presented in the sequel.

In order fully to appreciate the wants of a Quarantine establishment, it is necessary to have been a spectator of some of its woes. In reading the history of Quarantines as they have existed in various parts of the world, as well as legislative and other reports and communications relating thereunto, the paramount and almost exclusive subjects of inquiry have been, How shall we protect our citizens against the invasion of pestilential disease? How can we lighten the burdens which Quarantines impose upon commerce? The speeding of the weary voyager and the care of the sick being regarded as of minor importance, too often is the poor squalid immigrant, as he is frequently called, shunned, loathed, and, if sick, even viewed as a

culprit. We are not apt to appreciate their miseries, destitute, homeless as they are ; fleeing from famine and oppression abroad ; long pent up in the hold of an ill-ventilated vessel ; their sickness their misfortune, not their fault.

The following incident, related by the General Board of Health, in their Report to the British Parliament in 1849, presents but a faint idea of the feelings of many who, when almost touching their desired haven, are arrested at Quarantine.

A young unmarried lady, who arrived in a steamer from Hamburg, and was stopped at Quarantine in the Thames, thus writes :—

"It is all very well to say, 'Don't be afraid of the Cholera,' but those who have seen what I have in the last few days, will feel differently. On arriving at Gravesend, a custom-house officer came alongside, and told the captain that the ship must be kept at Quarantine, and that if he allowed any of the passengers or crew to land he might be shot. They then took away our letters without coming on board, and said they would send every day for our letters. You can imagine our consternation and alarm ; and then the horrid yellow flag ! and we were told if any one were taken ill or died, we should be detained, I know not how long ! Another ship was near us, also in Quarantine, and with a sailor in it who had died. Soon, we saw this ship moving slowly down the river to the Nore, that the body might be committed to the deep. Although it rained in torrents, we saw all the passengers standing on the deck, as they were afraid to go below for fear of the Cholera. If you could have seen that melancholy sight ! I shall never forget it. Need I endeavor to paint to you our feelings, not knowing how soon we might be in the same sad predicament. How we counted the hours, and how we rejoiced when the welcome news reached us that we might land once more in England !"

If such be the feelings of a passenger while in health, how sad must be the condition of the friendless, destitute stranger when struck down by a formidable malady ? Having left his home with most sanguine hopes of reaching a happy land, where he expects to enjoy that liberty and the facility for acquiring property which are less liberally granted in his native country ; just as he is on the point of reaching his destined haven, he is seized with a contagious disease, the Quarantine arrests his further progress, and his fond hopes are well-nigh blasted ! Does not such a forlorn stranger demand our commiseration, solicitude, and our best services ? Health and life are as precious to him as they are to us, and in his desolate, helpless state, far from the solace and sympathy of near and dear friends, surrounded by strange faces, his heart sinks, and he requires our kindest and best efforts to rouse his drooping spirits and cheer him up to health. But what is the first step towards the alleviation of his sufferings ? The ship has dropped anchor at Quarantine. The Health Officer is on board. The vessel may be a mile or more from the landing-place. Are there any sick passengers on board ? If so, a signal from one of the boatmen communicates the intelligence to the shore, and immediately one or more boats put off to the ship to bring the sick to land. Now it is the method of landing the sick, which was generally adopted while the writer was stationed at Quarantine, together with the examination of the philanthropic Dr. Howard's plate of the Lazaretto San Leopoldo

at Leghorn, that suggested to his mind the great benefits which would accrue were WET DOCKS constructed, if only for the purpose of alleviating the sufferings which attended the method of landing the sick at the S. I. Quarantine. According to the plan of the Lazaretto San Leopoldo, there is a dock almost entirely inclosed, but without any lock, into which vessels detained at Quarantine enter, and are safely moored. The vessel in the first place proceeds to the remote extremity of the dock, where the sick and other passengers are landed directly from the vessel, from which they are conducted or conveyed, and we presume as gently as possible, by an ambulance, sedan, or rail-car, when too ill or feeble to walk, to their appropriate ward or tenement. The passengers being landed, the vessel is hauled alongside the wharf, on which piazzas or warehouses are erected for the reception of cargo, and its expurgation.

It very often happens,—indeed, it is most frequently the case,—that emigrant packet-ships arrive in our port during the prevalence of easterly winds, and in stormy weather. Masters of vessels are generally impatient of delay, and anxious to get rid of their sick, that they may proceed to the pier in the city as quickly as possible. While, then, the Health Officer is on board inspecting the passengers, or soon after he leaves the vessel, the sick are brought up from between decks, lifted over the side, and carried down a vibrating ladder some twenty feet long, into the boat below. (We judge the distance to be at least twenty feet, many of these ships being from twelve to fifteen hundred tons' burden, and rising very high above the surface of the water.) The sick are then rowed to land, sometimes thinly clad, oftentimes through rain, or sleet, or snow, at the risk of extinguishing the lingering spark of life, which by greater care might have been fostered and revived. Frequently are they landed wet to the skin and chilled to the bone, and even in a hopeless moribund condition.

Dr. F. Campbell Stewart, an ex-physician of the Marine Hospital, N. Y., in his Report to the Legislature of New York, March 25, 1860, says: "The condition of the sick sent on shore from on board of ships, is sometimes deplorable. They often die in a few hours after admission, and occasionally in the boats in which they are landed, or as they leave the vessel."

Besides, the sick are frequently landed in a hurry, and consequently more or less roughly. We have known as many as one hundred and fifteen sick persons, in various stages of disease, landed in the space of twelve or fourteen hours, and as many as two hundred and fifty-nine patients, most of whom had Ship Fever, brought from on board of one vessel. (The latter were from the *Penelope* in 1801, when a great many cases of this disease were admitted from several vessels into Marine Hospital.)

The packet-ship *Great Western*, from Liverpool, of 1,443 tons' burden, anchored at Quarantine on the 14th of January, 1852. It was very stormy weather. Her complement of passengers was 791, sixty of whom were brought on shore with Ship Fever, and fifty-five doubtful cases, in whom it was apprehended this disease would soon be developed. Dr. Doane, the Health Officer, labored hard all day in

assisting the sick on shore, and without sufficient nourishment, until ten o'clock at night. Wet and weary he went home. On the next day he was taken ill, and died from Petechial Typhus on the 27th of January. So sure as effect follows adequate cause, doubtless had a plan similar to that of landing sick passengers at the San Lorenzo Hospital been established, the life of this humane, learned, faithful, and indefatigable physician would not have been sacrificed on this occasion.

We shall recur to the sick under the second part of the Resolution.

In the construction and equipment of a Quarantine establishment, in addition to precautionary measures against the introduction of contagious diseases of a malignant character by the seaboard, not only every needless impediment to commerce should be avoided so far as is compatible with the prime object in view, but every facility should be afforded for the speedy release of vessels from quarantinal restraint, as well as for the protection of property detained at Quarantine.

"There is not on the Thames," says Mr. McCullough in his Dictionary on Commerce, "a Lazaretto where a ship from a suspected place may discharge cargo and refit, so that it is detained frequently at an enormous expense during the whole period of Quarantine, while, if she had perishable goods on board, they may be materially injured. The complaints of Quarantine grievances and oppressions are almost wholly occasioned by the want of proper facilities for its performance. Were these afforded, the burdens it imposes would be comparatively light, and we do not know that any more important service could be rendered the country than by constructing a proper Quarantine establishment."

Again, in examining again the plan of the Lazaretto San Leopoldo, as represented by Dr. John Howard, in his "*Account of the Principal Lazarettos in Europe*," 2d ed., 4°. London, 1791, we were forcibly impressed with the superior advantages which would be derived from suitable Wet Docks, in which vessels might be securely moored during their Quarantine ordeal. Such docks should be water-tight, closed by locks, which would readily admit the ingress and egress of vessels in compliance with the orders of the Health Officer.

Judging from what we have observed in New York Bay, the lower bay especially, of the uneasy manner in which vessels ride at anchor, rolling and tossed to and fro by the turbulent billows, even under a moderate breeze, and the danger to which such vessels are exposed during tempestuous weather, the difficulty and risk of transshipping their cargoes into lighters alongside, we have thought that such docks would afford adequate protection to vessels against the violence of storms; secure their merchandise from plunder and accidental loss; expedite the introduction of goods into the market; and even allow foul vessels to receive their return cargoes and clear out to sea should the difficulty of expurgating them deter their approach to the city. The vessel, having entered the dock, might proceed immediately to the place appointed for landing the sick and other detained passengers, which being done, she might be hauled alongside the wharf, on which piazzas and warehouses have been erected for the reception and

purification of the cargo. When merely ventilation, drying, and cleansing the interior of packages are deemed necessary, inasmuch as this would require only a brief detention, piazzas should be preferred; but when the cargo requires a protracted detention, warehouses, on account of the security they afford, would be most suitable. Ballast as well as cargo, being discharged, the vessel should be cast off and anchored in the centre of the basin, there to be expurgated, after which she might be permitted to proceed to the city, or place of destination, or to an export dock adjacent, for the reception of goods brought down in lighters, obtain her Custom-House clearance, and put off to sea with her return cargo.

If everything were removed from the vessel, it would occupy but a few days to purify and cleanse her, unless she should be *very foul*, in which case she should be floated into a *dry dock* in proximity with the wet dock, for more thorough expurgation. We venture to suggest such a structure as a dry dock for raising vessels completely out of the water, in order that they may be thoroughly overhauled and everything pernicious ejected; but blacks only, or those who have had the Yellow Fever, should be employed in cleansing them.

On this topic we beg leave to digress, as we consider a dry dock to be a very important appendage to a Quarantine establishment.

The great mortality which has been produced by Yellow Fever on board of foul ships, whether this disease has originated spontaneously or from some external source, has given rise to numerous inventions for their expurgation. Hundreds of persons, especially on board of men-of-war, have been attacked with Yellow Fever, attended with great mortality, in consequence of inhaling the morbid exhalations from a ship's hold; hence, no pecuniary consideration should be permitted to operate against the employment of any plausible means, calculated to prevent their elimination, to expel or destroy them. Fumigants, disinfectants, and deodorants have disappointed the expectations of those who have confided in them. The pumping out of bilge-water and drenching the hold with salt water have often proved inefficient; and even freezing mixtures only lock up the miasm for the time being, without altering its nature, and afterwards leave the vessel in an unhealthy state of humidity, with increase of filthiness. They are evanescent. The most offensive smells are by no means the most pernicious. They warn us of danger, and compel us to resort to ventilation for their expulsion. The most deadly miasms are imperceptible by the senses, and undetectable by chemical tests, (unless it be the *air test* of Dr. Angus Smith, spoken of by Miss Florence Nightingale, which we have not seen,) and are produced by the action of moisture gradually, but persistingly decomposing the planks and timber of the vessel. We can get rid of bilge-water by pumping it out, and its smell by flooding the vessel; but the moisture remains, though pumped ever so dry, causing mustiness and mouldiness, and the development from the fabric of the vessel of a pernicious febrile miasm, similar to that evolved from external vegetable decomposition, but rendered more virulent by concentration in the close, ill-ventilated hold of the vessel. Cleanse and ventilate as much as you may;

while humidity exists, the morbid exhalations will persist. Dryness, therefore, is essential to thorough expurgation. While the hold of the vessel is sunk below the surface of the water, this can scarcely be accomplished; but elevated on a dry dock, it would be, completely and expeditiously.

To show the importance of dryness in overcoming pernicious exhalations, the ship *Regalia*, which sailed from the coast of Africa in 1815, with black recruits, affords evidence. This vessel, while on the coast, took on board a large quantity of green wood; her ballast was what is called *shingle ballast*, composed of small stones, with a considerable mixture of mud and other impurities; besides which, the ship was leaky, and the water-casks leaked. After she got to sea the Yellow Fever broke out, and all hands on board except the blacks were attacked therewith. After the ship arrived at Barbadoes she was cleansed and ventilated, notwithstanding which the disease continued until the hold had been exposed for a time to the concentrated heat of many stoves, after which it ceased, the moisture having evaporated.

But on this topic we cannot dwell, and must therefore beg leave to refer to Dr. R. La Roche's elaborate and valuable Treatise on Yellow Fever, vol. ii. chap. xxii., where the causes of Yellow Fever on ship-board, and the different methods adopted for expurgation, are fully detailed.

In our opinion, the principal, if not the sole means upon which we can rely for the thorough expurgation of a foul ship, are ventilation, cleansing, and the drying process, all of which can be most effectually performed while the vessel is exposed on a dry dock to the heat of the sun, at the same time that she is undergoing the necessary repairs, after which the timber, planks, and other wood-work of the vessel *should be coated internally with a composition impervious to water, and incombustible.*

With regard to vessels of war with ordnance on board, the difficulty and expense of raising them upon a dry dock would be too great for a Quarantine establishment. Such vessels, after landing their sick, should steer for the frigid zone and clean up there.

To resume: The protection which Wet Docks afford to vessels in Quarantine is not limited to the dangers which may accrue from stormy weather while riding at anchor in an open bay or roadstead. Such docks being, as it were, insulated, are more easily guarded against depredations of every kind, whether the cargo still remains in bulk, or is in process of unloading. "Previously to the construction of Wet Docks on the Thames, the property annually pillaged from vessels was estimated to amount to £500,000 sterling," though Mr. McCullough, from whom we quote, thinks this estimate to be somewhat exaggerated. Dr. Bissell, ex-physician-in-chief of Marine Hospital, in his Report for 1857, to the New York Legislature, states: "For years past, and until the organization of the metropolitan police, there was no protection to the property of importers and ship-owners arriving in the city of New York. Burglary and larceny were perpetrated by thieves and robbers at pleasure, and with almost perfect impunity; and if the

losses of our commercial men in this respect could be named, the amount would be startling. These depredations were committed by emigrant runners and boatmen at large, who are constantly on the alert to prey upon vessels, cargoes, and passengers, by day as well as by night, while these vessels are lying at anchor, requiring a large and vigilant police force to prevent such depredations."

That the construction of Wet Docks has done much to attract and facilitate commerce, is an historical fact. "The first Wet Dock in Great Britain was constructed in Liverpool about the year 1708, at which time Liverpool was but an inconsiderable town. This, however, was the commencement of her commercial importance; and the accommodation afforded by her Wet Docks is one of the circumstances that has most strongly conduced to her extraordinary increase in population, commerce, and wealth." The Liverpool Docks now enclose an area of ninety acres of water.

The West India Docks were the first constructed on the Thames. They were commenced in February, 1800, and partially opened in 1802. The Export Dock is eight hundred and seventy yards long by one hundred and thirty-five wide. Its area about twenty-five acres. The Import Dock is of equal length, and one hundred and sixty-six yards wide. The South Dock, which is appropriated to both import and export vessels, is one thousand one hundred and eighty-three yards long; the locks at each end are forty-five feet wide, large enough to admit of vessels of one thousand two hundred tons. At the highest tides the depth of water in the docks is twenty-four feet, and the whole will contain with ease six hundred vessels of from two hundred and fifty to five hundred tons. There are other docks pertaining to this department, which, together with the above and the warehouses, comprise an area of two hundred and ninety-five acres.

This spacious and magnificent structure was formed by subscription, and vested in the West India Dock Company, their capital being £1,380,000 sterling, and has proved as profitable as well as beneficial investment. In addition, there are on the Thames, the East India, London, and St. Catharine's Docks. For further information on this subject, we refer to McCullough's Commercial Dictionary. But these docks are on a much more extensive scale than is needed for quarantine purposes. Being intended chiefly for yellow-fever vessels, a dock capable of accommodating thirty or forty vessels at a time would be sufficiently capacious, for, after discharging cargo, they would haul off to the middle of the basin for expurgation.

That docks of such moderate dimensions would answer every needful purpose, we judge from the number of vessels which arrive from ports where yellow fever prevails during the quarantine season. Dr. Whiting, ex-Health Officer, in his testimony before a Committee of the Legislature, stated that the number of sickly vessels, with yellow fever on board, from the 13th of March, 1848, until January 1, 1849, a period of nine and a half months, was 44. According to the Report of Dr. R. H. Thompson, late Health Officer, 47 infected vessels from twelve ports, from the 1st of April to the 1st of August, 1856, sent into Marine Hospital, fifty-eight cases of yellow fever; and from the 16th

of April to the 1st of August, 1858, forty-three vessels from nine ports, sent to the Hospital ninety-eight cases of the same disease; and Dr. Elisha Harris, an ex-physician-in-chief of the Marine Hospital, reports seventy-nine infected vessels from April 10 until October 4, 1856, of which number forty-one arrived in July, twenty in August, and ten in September. Now, when we take into consideration that all such vessels are not detained at quarantine at the same time, and that as many sickly vessels arrive in New York as at any other port of the United States, the dimensions of the dock need not be larger than above mentioned.

The advantages which Wet Docks possess over a breakwater consist, not merely in accommodation and economy, but also in affording greater protection to the shipping. Major Delafield, of the U. S. Engineers, testified before a Committee of the N. Y. Legislature, "that a breakwater has no tendency to protect a vessel from the force of the winds; their fury and power in driving vessels from their moorings, is the same with as without a breakwater. It is only in resisting the force of the waves and heavy seas that such a structure is of any service."

Inasmuch as a bill has been introduced into the Senate of the United States, by the Hon. Charles Sumner, to abolish all appropriations to Marine Hospitals, and the tax on Seamen,—which tax, so far as it goes, has hitherto been applied towards defraying the expenses attendant upon the care of sick sailors,—it might be deemed of little utility to discuss the second part of the Resolution under consideration,—which relates to placing Quarantine Hospitals and their appurtenances under the jurisdiction and charge of the General Government,—until the fate of this bill is decided. Nevertheless, as there are, in our opinion, cogent reasons why the United States should possess the control and charge, as well as the appointments of a Quarantine establishment, we will notice some of the grounds on which this latter part of the Resolution was based.

In the first place, we consider that a quarantine, from its close connection with the U. S. Revenue Department, and the important bearing which it has upon commerce, (which Congress alone can regulate,) and upon travellers soon to be dispersed throughout different and distant States of the Union, is a national, rather than a State concern, and we cannot conceive that a uniform system of quarantine can be established throughout the Union unless it be organized, almost exclusively, as a national institution.

The following extract from the able Report of Dr. Wm. T. Wragg, presented to the Third National Quarantine and Sanitary Convention, respecting the feasibility of a Uniform System of Quarantine, coincides in a measure with this view of the subject.

We find, says Dr. Wragg, in Brightley's Digest, p. 810, under the head of Quarantine and Health Laws, an act of Congress, passed February 25, 1779, the third section of which reads thus:—

There shall be purchased or erected, under the order of the President of the United States, suitable warehouses, wharves, and inclosures, where goods and merchandise may be unladen and deposited from any vessels sub-

ject to quarantial or other restraint, pursuant to the Health Laws of any State as aforesaid, at any convenient place or places therein as the safety of the public revenue and the observance of such laws require.

We will now refer to an almost unanimous decision of the last Convention,—that *fomites*, in the form of foul merchandise, clothing, and baggage of various kinds, is a more public medium for the conveyance of yellow fever than the body of the sick afflicted therewith. That the sick, when divested of *fomites*, may be permitted to enter a city with impunity, whilst vessels, merchandise, baggage, and clothing, in certain conditions, brought from the same place, with or appertaining to the sick, must be detained until thoroughly expurgated. Such seems to be the interpretation of the resolution alluded to, and consequently ships, merchandise, clothing, bedding, and other kinds of baggage are, so far as yellow fever is concerned, the principal things and materials for quarantial restrictions.

Forasmuch, then, as it appears from the preceding extract from Dr. Wragg's Report, that foreign merchandise, while detained at quarantine, is in charge of the General Government, or under its protection, and as it is customary for Revenue Officers to inspect cargoes, examine the trunks, boxes, and baggage of immigrants, with the view of detecting contraband articles, or smuggled goods, these officers must unavoidably, in the discharge of their duty, come in contact with *fomites*, and consequently would incur but little additional risk in supervising the purification of articles deemed foul, or capable of inducing and propagating disease, the manipulations being performed either by negroes, or by persons who have had the yellow fever, under their direction and control. And furthermore, as *fomites* enclosed in baggage, and *possibly* in merchandise, may be conveyed to parts remote from the port of entry, and even to distant States, the entire Union may be considered as interested in the faithful discharge of quarantine duties, no matter where the quarantine is located; hence one individual State should not be burdened with the expense of sustaining a precautionary system which is calculated to benefit the whole. It is evidently a national concern, or should be. We consider that goods, while in the public stores at quarantine, are under the supervision and protection of the General Government.

Respectfully submitted,

JOHN W. STERLING, M. D.,	} Committee."
ALEX. H. STEVENS, M. D.,	
J. McNULTY, M. D.,	

With such testimony, and with the various quarantine codes of civilized nations before your committee, and from the results of their own personal observations, strongly corroborating such statements, they feel that the task imposed upon them by the resolutions of the last Convention possesses such a degree of practical importance, and involves such a variety of questions and interests, that "the specific

recommendations of principles and measures of quarantine," called for in this Report, need to be very carefully considered and clearly stated.

Having been directed to report to the fourth meeting of this Convention "specific recommendations of principles and measures of quarantine, as severally applicable to yellow fever, cholera, typhus fever, and smallpox, having reference, also, to the variations which different localities require," this Committee will now endeavor to comply with the direction, in accordance with the design of the resolutions.

SPECIFIC MEASURES OF QUARANTINE,

SEVERALLY APPLICABLE TO YELLOW FEVER, CHOLERA, TYPHUS,
AND SMALLPOX, WITH THE VARIATIONS WHICH
DIFFERENT LOCALITIES REQUIRE.

As the specific measures of an efficient system of external sanitary police, to guard against the several diseases here enumerated, will, in particular cases, relate to persons, clothing, cargoes, or vessels, the special provisions required may be included under the following heads :

I.—QUARANTINE HOSPITALS, AND THE PROPER CARE OF THE SICK.

II.—QUARANTINE WAREHOUSES AND DOCKS, AND THE PROPER DISPOSAL AND CARE OF INFECTED THINGS.

FIRST.—*Quarantine Hospitals, and the Care of the Sick.*—It must be admitted that the welfare of the sick and the interests of the public health require that the sick with pestilent diseases should receive medical attendance and hospital care immediately upon their arrival at quarantine, or at the first place of detention of vessels by quarantine authority. Ample provisions, therefore, should be made for the immediate and proper care of the sick at every quarantine station.

The extent and variety of such hospital provisions, required for particular quarantine stations, will manifestly depend upon the number of patients liable to be received, and the variety of infectious maladies to be treated.

Distribution of the Sick.—It is plain that no two or more of the pestilent maladies enumerated in this Report should ever be introduced together into the same ward, and, if possible, they ought to be treated in separate buildings.

While facts do not warrant the conclusion that any disease is neces-

sarily and inevitably infectious or contagious under all circumstances, it is so true of smallpox and of typhus that they do certainly spread by personal contact, limited infection of apartments, and also by personal *fomites*,—it is manifestly the duty of the sanitary authority to insure the entire seclusion of each of those maladies. As regards both yellow fever and cholera, it will be generally admitted that it is due to public quietude, even if it is not known to be absolutely necessary for public safety, that persons arriving at quarantine with either of those maladies should be provided for in secluded hospitals. But it is safe to recommend that the local sanitary authority of any city or port should decide whether special hospitals be established exclusively for the sick arriving at quarantine, or whether the special hospitals, established for the seclusion of the same diseases occurring in such city or port, be also used for the same classes of patients arriving from abroad. One hospital establishment for typhus fever, and one smallpox lazaretto, may, in certain places, be so located and furnished as to answer well for the sick from abroad as well as at home, and also promote the efficiency and economy of both the external and internal sanitary police.

It is probable that the proper distribution of the sick may sometimes be best secured by such a combination of the hospital arrangements of the external and the internal sanitary systems of particular places, but proper *distribution* and the safe *seclusion* of the sick with pestilential diseases should be secured in every quarantine establishment.

Location of Quarantine Hospitals.—First, they should be so convenient of access and so situated with reference to the quarantine anchorage and the quarantine warehouses and docks, as to offer the best possible facilities for the immediate medical care of the sick arriving, and of the laborers or other persons becoming ill at the quarantine station.

Character and Construction of Quarantine Hospitals.—First, they should be so located as to enjoy a *pure* and *dry* air; and consequently, should be sufficiently remote from the warehouses and infected vessels to be safe from any danger from that quarter, nor should they be landlocked by elevations around them, or too much sheltered from the windward.

Whether erected on the shores, or floating, the number of separate hospitals should be sufficient to give at least one for each of the diseases that are to be provided for at any one period; and the hospitals should be so arranged as to secure—

1. Perfect cleanliness.
2. Ample space for patients.
3. Complete and controllable ventilation.
4. The best facilities for the reception and care of the sick.
5. The requisite means for cleansing and disinfecting bedding and clothing.

There can be no better test of the good management of hospitals for pestilential diseases than that the hospital wards be so free from contamination that they do not become infected places. To preserve a typhus-fever or a smallpox ward from infectious contamination, and,

consequently, to secure the welfare of its inmates, it is indispensably necessary that the air-space be much greater than has usually been provided in our hospitals. In the wards for cholera and for yellow fever, the welfare of the sick, if not the safety of attendants, requires a liberal and constant supply of fresh air.

To attain such a degree of sanitary security in quarantine or fever hospitals, it is necessary that ample space be allotted to the sick. Not less than two thousand five hundred cubic feet of air-space should be allotted to each patient, unless the facilities for insuring the constant supply of fresh air from without, by means of arrangements for plenum ventilation, be of an unusual character. But it is not the design of this Report to enter upon any details of hospital construction.

The main objects of reference to this subject have been attained in the foregoing remarks, on the proper distribution and care of the sick at quarantine. But we need to add in this place a few suggestions upon an indispensably important branch of service, connected with the management of hospitals, particularly those pertaining to a quarantine establishment. We refer to *the best means for the cleansing and disinfection of clothing, etc., from hospital wards, or from infected vessels.*

There cannot be a more highly important regulation in any hospital than that which secures the immediate cleansing of every utensil and every article of personal and hospital clothing, as soon as soiled; and in the arrangement of a quarantine establishment, none is more essential than that which provides for the immediate and thorough *disinfection* of all articles of clothing, bedding, etc., both from infected vessels and hospital wards. It is not only desirable, but necessary, that every quarantine establishment should be provided with ample means for effecting such purification and disinfection, as a grand measure of sanitary protection against all personal and common *fomites* of pestilent diseases.

Notwithstanding the general impression regarding the uncertainty of the ordinary chemical disinfectants, so called, it will not be denied that all articles of clothing may, and certainly ought to be, completely disinfected and thoroughly cleansed by some speedy and effectual process, at every quarantine establishment.

By referring to the able report that was adopted by the Convention last year, on disinfectants, it will be seen that for the disinfection of apartments or things contaminated with the infectious cause of pestilent diseases, free ventilation must be the main reliance; and it is truly stated in that report, that "*a disinfectant for the yellow fever is a desideratum.*" Nearly as much may be said of other specific febrile infections. In the present state of our knowledge respecting the essential nature of these infections, and their relations to physiological and atmospheric chemistry, it is not to be expected that positive chemical disinfectants will be successfully applied; but we recommend, however, that, for the disinfection of all *fomites* and apartments contaminated with yellow fever or any other febrile poison, full experiment be made with steam or with dry heat above 200 degrees Fahrenheit, as an effectual mode of disinfection and purification, whenever and to whatever such heat may be safely applied. This recommendation is

based upon obvious principles and varied observations that need not be stated here, particularly as they have been embodied in a special memoir for this Convention, by a member of this Committee. But in this Report, suggestions respecting extreme temperatures, forced ventilation, etc., are made solely with reference to the practical applications of reliable means for such processes of disinfection as may readily and effectually be put in requisition in hospitals, contaminated apartments, quarantine warehouses, and infected vessels.

And for this purpose the Committee recommend : *That in connection with every quarantine establishment, at the warehouses as well as at the hospitals, properly constructed steam-generators and steam chambers or vats, be provided for the disinfection of all personal, hospital, and ship's clothing and bedding, together with such other infected goods or things as may properly be subjected to high steam heat.*

It is also recommended that experiment be made to test the utility of steam as a disinfectant in vessels contaminated with yellow fever or any other febrile poison that is not readily destroyed or dissipated by other agencies.

It is also recommended that at every quarantine establishment it shall be an established rule that all articles of clothing, bedding, or dunnage on board of vessels suspected of being contaminated with yellow fever or cholera, and liable to propagate the same, shall be subjected to high steam or dry heat for the purpose of disinfection ; and that this duty be attended to as soon as convenient after the arrival of the infected vessel or things ; and especially, that, without such process having been performed, no article or thing whatsoever shall be thrown overboard or otherwise disposed of, except by rapid incineration or by being securely sunken under the water.

It is also recommended that in every quarantine hospital it be an established rule, that all articles of personal clothing, bedding, and every kind of absorbent material pertaining to the furniture and utensils of the wards, or the care of the sick or the dead, be removed to the steam-vats as soon as they become soiled or contaminated ; and it is further recommended that, in addition to means for ventilation, provision be made for the application of heat, by steam or otherwise, in the wards where pestilential infection is liable to be perpetuated.

In the case of *fomites* of smallpox and of typhus fever, the same rule is recommended to all sanitary authorities, connected either with the internal or the external police of cities.

The foregoing suggestions and recommendations embrace the most important measures, which are of essential importance in the executive management of quarantine hospitals ; and all specific regulations that the Committee would recommend on this subject may be concisely summed up under the heads of —

1. *Ample air-space and effectual ventilation.*
2. Proper supply and control of sunlight in the wards.
3. Such construction and such material for hospital wards as not to favor the retention and perpetuation of febrile poisons and pestilential emanations.
4. Means for *immediate* and safe disinfection of all clothing, bedding, etc.

5. Facilities for the reception of the sick, and for the removal and burial of the dead without the observation of the patients in the wards.
6. A resident medical officer, who shall have control of the internal management and police of the hospitals.

LOCATION, CONSTRUCTION, AND THE EXECUTIVE MANAGEMENT OF QUARANTINE DOCKS AND WAREHOUSES.

In a former part of this Report reference has already been made to the universal defect of all modern quarantine establishments, viz : the absence of suitable docks and warehouses for infected vessels and cargoes. This is a subject of such vast importance to commerce, and of such vital interest to the public health, that the Committee would deem it their duty to present the full argument in favor of the recommendation they desire clearly to express in the declaration of the proposed code. But, happily for the brevity of this Report, as well as for the complete statement of the various propositions connected with the subject, a special report on wet docks and quarantine warehouses will also be presented to the Convention.* On this subject, therefore, the Committee need only to enunciate the following general statements :

1. Ample and safe warehouse facilities, and convenient and safe dockage for infected vessels and their cargoes are indispensable requisites for every quarantine establishment where yellow fever, cholera, or the plague are liable to be perpetuated by exotic *fomites*.

2. Though not indispensably necessary to enable the sanitary authorities to guard against the introduction of typhus or smallpox, such special quarantine docks and warehouses might often be of great service.

3. At any port where a considerable number of vessels with their cargoes is liable to protracted detention at quarantine, wet docks and capacious warehouses, exclusively devoted to quarantine purposes, are recommended ; and it is further recommended, that, in all cases where a vessel is reasonably suspected of being infected with yellow fever, it shall not, even after discharging cargo, be permitted by the health officer, or the local council, to approach nearer to the city than the quarantine docks, or warehouses, until thoroughly disinfected.

4. For the general security of the public health of all cities in maritime communication, no less than for the convenience and benefit of commerce, it is recommended that a dry dock, or a marine railway, be constructed in connection with the quarantine docks and warehouses, for the purpose of enabling merchants to overhaul and repair their vessels, and to enable the sanitary authorities to make such inspections as they may deem expedient in connection with such repairs.

5. The quarantine docks, warehouses, and anchorage, should be located at a sufficient distance from any populous neighborhood to insure seclusion, and be free from any liability of communicating the infection of any disease to any persons not employed at the quarantine

*See p. 9, *et seq.*

establishment. To this end, it is recommended that the docks, warehouses, and anchorage be located at least two miles from any populous neighborhood, however rural, and, when practicable, at a much greater distance from cities or large towns.

6. The warehouses should be "so constructed as to secure the best natural ventilation, and to that should be added appliances and power to afford to each store-loft and apartment the most complete provisions for artificial ventilation and disinfection." It is further recommended that at every quarantine establishment there should be constructed, in connection with the warehouse or warehouses, an apartment, or chambers, with suitable appliances for special disinfection, by high steam, dry heat, refrigeration, chemical disinfection, and *forced ventilation*; and that facilities be supplied for the speedy and safe delivery and shipment of goods that have been subjected to such disinfecting processes.

7. It is recommended that the *executive* management and control of quarantine warehouses and docks, and the goods and persons therein, be under a competent scientific officer, who shall be approved by the health officer of the port, and the local sanitary council.

As the special regulations which the Committee would recommend respecting the unlading, detention, and *pratique* of cargoes, will be stated in the *declarations* of the code submitted, we will not extend our suggestions on this subject.

It will be observed that this report assumes, without argument or any narration of reasons or opinions, that both yellow fever and cholera are diseases capable of being transmitted and propagated from place to place beyond their indigenous *habitats*.

In the case of yellow fever, having satisfactory evidence that such transmission is effected generally, if not always, by means of inanimate *fomites*, the Committee have no occasion to renew the discussion of questions which were so fully entered upon by the Convention last year. But it will be observed that the suggestions and recommendations contained in this report, so far as they relate to the sick with yellow fever, contemplate such care and seclusion as to answer the demands of those among us who still believe in the personal communicability of that scourge of the tropics, while providing for the simply humane interests of the sick.

In respect to Asiatic cholera, the report coincides with the high authority of the most reliable commissioners and committees that have specially investigated the history and progress of that fearful malady. With the conclusions of Doctors Baly and Gull, as expressed in the able Report of the British Royal College of Physicians, your Committee believe that "human intercourse is certainly only one cause of the propagation of disease," and that "the propagation of the disease by human intercourse does not prove its contagious nature;" all of which may be affirmed with equal truth of the propagation of yellow fever. But "the *possibility* that cholera is occasionally communicated by a virus produced in, and emanating from the sick," is admitted.

As regards the utility of quarantine restrictions against cholera, it may safely be stated in the language of the Royal College of Physi-

cians, that "quarantine has undoubtedly often failed of its object, partly from its being evaded by the crews of infected ships, partly, perhaps, from the ships being placed so near to habitations on shore, that the imperfect air of the ships would be carried to them by atmospheric currents; and, in some cases, probably, because clothes, still containing infectious matter, were conveyed on shore during or subsequent to the period of quarantine."

This report also adopts the conclusion of the able document from which the preceding paragraphs have been quoted, that "it cannot be doubted that ships are more or less fitted to convey the disease, or its cause, from port to port, in proportion to their want of cleanliness, defective ventilation, and overcrowded state; and that if these evils, of which the two former are so flagrant in the smaller trading vessels, and the two latter in ships carrying passengers, could be removed, the danger of the importation of cholera would be greatly lessened." The language of this most recent and reliable authority on this subject so fully expresses the views of your Committee, that we beg permission to quote the following, as the best that can be given on this point in our report.

"While, therefore, it is much to be desired on general grounds, that measures should be adopted for inculcating and enforcing the attention to cleanliness and free ventilation, in the whole mercantile marine, the special application of measures of this kind to ships coming from ports where cholera prevails, as far as may be practicable, is imperatively called for. A close inspection of all such vessels should be made on their coming into port, and it would not be unreasonable to require that there should be brought with each ship coming from an infected port an official certificate of its having been inspected, and found cleanly and not over-crowded, and the crew healthy at the time of its sailing."

"On the arrival of ships having persons ill of cholera on board, or having had deaths from that disease during the voyage, more active measures must be adopted; 1, and the best that have been recommended seem to be, the removal of the sick to a hospital ship, moored at a distance from the other shipping in the harbor, or to a special hospital in an isolated and airy situation on shore; 2, permission to the rest of the crew to land after exchanging their dress for fresh clothes provided from the shore; 3, the thorough exposure of articles of dress and baggage to the air and disinfecting agents before they are removed from the ship (or from quarantine warehouses); and, 4, the use of disinfecting agents in every part of it, but especially in the parts occupied by the crew and their baggage."

In the foregoing concise statement is embodied all that need be said on this subject of quarantine for cholera, though there is stronger ground for quarantine restrictions against that disease in America than can exist on the Eastern continent.

As regards typhus fever and smallpox, this report recommends that all specific directions or regulations for the management of both the sick and the vessels in which they arrive be committed to the discretion of the local sanitary authorities; yet the Committee, desiring to

fulfil the commission intrusted to them, feel it incumbent on them to report as follows regarding the quarantine regulations demanded by those diseases :—

It is well known that typhus fever and smallpox are diseases that prevail most frequently in cold weather, and that persons laboring under these maladies, and also infected goods, are not subjected to quarantine. It has been well observed that a ship arriving with typhus fever or smallpox at midwinter is as legitimately a subject for quarantine restrictions as one with yellow fever on board arriving in midsummer. Nor will it be denied that the danger of contagion in smallpox and from infection in ship fever is far more to be dreaded than any danger from *persons* sick with yellow fever at any season. While the *fomites* of yellow fever, existing independent of persons, though active only during hot weather, are much less subject to control than the *fomites* of typhus fever and smallpox.

Should a single doubt linger in the mind of any one on this question, let it be remembered that the foul atmosphere of a ship at sea is oftentimes produced during cold weather or in cold latitudes, by overcrowding, and by the exclusion of pure air, impoverished diet, and want of proper attention to cleanliness. Such a condition of things has repeatedly happened, and disease has been introduced into our ports by the arrival of emigrant, and other vessels, in midwinter, after a protracted voyage, or where the ship's company consisted of a squalid, filthy, half-fed, and intemperate collection of passengers, at the same time the vessel laboring under a leaky hold, and having a perishable cargo on board. It is, indeed, well established that febrile, infectious, and pestilential diseases are liable to occur wherever and whenever there is overcrowding of human beings in close or filthy places, especially on shipboard when deficiency of space, paucity of fresh air, the presence of extreme humidity, bilge-water gases, and idiomiasmata are peculiarly active causes of fatal fevers and diffusible infection.

The frequent and destructive outbreaks of pestilent fevers in naval transports, and the peculiar experience of quarantines at all our Atlantic ports where foreign immigration has furnished its painful illustrations of the evils of overcrowding in passenger ships, sufficiently enforce the importance of practical attention to the condition of this class of vessels on their arrival in port, while their records pointedly illustrate the necessity for improvement in naval or marine hygiene. Indeed, nothing more strikingly illustrates the importance of this subject than the frequent instances of the propagation of pestilent fevers from ships' holds after arrival and unloading at the wharves of our cities.

The propagation of all such diseases as are generated or may be transported by ships, is subject to such varied contingencies as to render it manifestly desirable that in every port the local sanitary authority or board of health should exercise such surveillance and control over the imported sources of disease as may be found necessary for the protection of the public health. But it is evident that in all places where the same diseases are indigenous, naturalized, or locally preva-

lent, as in the case of typhus, scarlatina, and smallpox,—in nearly all the cities of Christendom,—the special restrictions of quarantine for those maladies should not exceed, but fully harmonize with, the scope and spirit of the restrictions and regulations of the internal sanitary regulations, in each port or city respectively. As stated under the head of *Distribution of the Sick*, considerations of efficiency and economy may often render it desirable to combine the appliances of the internal with those of the external sanitary police.

In regard to smallpox, there can justly be no relaxation of such restrictions as are necessary to insure seclusion of its victims and the personal *fomites* of that malady, until the great prophylactic *vaccination* has been universally applied. But fortunately the ordinary cargoes of merchandise are very rarely liable to become in any degree infected with the virus of smallpox, typhus, or cholera. The readiness with which a vessel contaminated with these maladies may be disinfected, should relieve commerce from onerous burdens which these diseases inflict. The actual detention or cost being only for the purpose of securing complete ventilation and cleansing. Yet, for even these purposes, we regard the preparation of special docks and warehouses desirable; and for the security of most of the Atlantic and Mediterranean ports, such special facilities should be regarded as absolutely necessary in carrying out any plan for the effectual relief of the burdens inflicted by yellow fever and the plague. Whatever may be learned in the future respecting the propagation of yellow fever, cholera, and the plague, it is highly important to maintain all those sanitary restrictions which are requisite to insure the exclusion of those maladies from healthy ports.

CODE OF MARINE HYGIENE.

DECLARATIONS.

1. Every organized government has the right of protecting itself against the introduction of infectious diseases, and of putting any country, place, or thing in quarantine which would introduce infectious diseases; provided, however, that no sanitary measure shall go so far as to exclude or drive from port a vessel, whatever may be her condition.

2. The only diseases at present known, against the introduction of which general quarantine regulations should be enforced, are—plague, yellow fever, cholera, smallpox, and typhus fever. As regards plague, the European Congress at Paris had the right to settle the question for the nations there represented; and, inasmuch as they and

the other nations of the eastern continent have reason to subject the plague to quarantine restrictions, the States of America yield implicit obedience to that convention.

3. All quarantine regulations, of any place whatever, should bear with equal force against the toleration or propagation of disease as against its introduction; and authority to prevent the introduction of disease in any place should be equally applicable against its exportation.

4. All quarantinable diseases are chiefly introduced and propagated by the *materiel* of commerce; and it is therefore against it that quarantine restrictions should be instituted, and *not* against the *personnel*; excepting, however, persons with no evidence of vaccination, and known to have been exposed to smallpox; such persons shall be vaccinated as soon as possible, and detained until the vaccinia shall have taken effect; otherwise, they may be detained fourteen days from the time of the known exposure.

5. The application of quarantine regulations shall be regulated by the official declaration of the constituted sanitary authority at the port of departure where the malady exists. The cessation of these measures shall be determined by a like declaration that the malady has ceased,—after, however, the expiration of a fixed delay of thirty days for the plague, fifteen days for yellow fever, and ten days for cholera.

6. It is obligatory on all vessels to have a *BILL OF HEALTH*; this shall consist of two kinds only, a *clean bill* and a *gross bill*, the first for the attested absence of disease, and the second for the attested presence of disease. The bill shall state the hygienic state of the vessel; and a vessel in a bad condition, even with a clean bill of health, shall be regarded as a vessel having a gross bill, and shall be submitted to the same regime.

7. The plague, yellow fever, and cholera being the only maladies that entail general measures, and place in quarantine those places whence they proceed, the restrictions enforced against these diseases shall not be applied to any other suspected or diseased vessel.

8. The power of applying the general principles of this code, and of acceding to its provisions, are expressly reserved to those nations and governments who consent to accept the obligations it imposes; and all the administrative measures proceeding from it shall be determined by international sanitary regulations, or by a convention of the representatives of the governments which have adopted it.

9. This code shall continue in force and vigor among the governments adopting it for five years, and it shall be the duty of any party wishing to withdraw from its observance, at the end of that time, to officially declare *his* intention six months before the term expires; if there be no such notice, the code shall be regarded as in force one year longer, and thus it shall continue year after year, with all the governments accepting it, until after due notice,—six months before withdrawal.

PROVISIONS IN DETAIL.

I.—MEASURES RELATING TO DEPARTURE.

10. Measures relating to departure comprise observation, inspection, and the ascertaining of the sanitary state of the place and vicinity; the examination and ascertaining of the hygienic state of the vessel which is about leaving, of its cargo and provisions, of the health of the crew, and, if there are any passengers, of their health also; and lastly, of the bill of health, and all relating thereto. These observations, inspections, and examinations shall be confined to the authorities hereinafter designated.

11. All vessels before lading, must be visited by a delegate of the sanitary authority, who shall be a doctor of medicine, and submit to hygienic measures, if deemed necessary. The vessel shall be visited in all her parts, and her hygienic state ascertained. The authority shall inquire into the state of the provisions and beverages, in particular of the potable water and the means of preserving it; he shall also inquire into the state of the crew, and in general into every thing relating to the maintenance of health on board. If any person has been shipped, having a transmissible disease, such person shall be forthwith discarded.

12. Charges shall not be made until after the visit, and the accomplishment of the measures judged indispensable by the sanitary authority.

13. Captains and masters shall furnish to the sanitary authority all the information and all the evidence, to the best of their knowledge, demanded of them. If the sanitary authority judges necessary, and does not believe himself sufficiently informed by the captain or other persons in charge, he can proceed to a new visit, after the lading of the ship, in order to assure himself if all the prescribed hygienic measures have been observed.

14. These various visits shall be made without delay, and in such a manner as to avoid unnecessary loss to the ship.

15. Vessels carrying a foreign flag shall be visited by the sanitary authority, with the consul or consular agent of the nation to which the vessel belongs.

16. The number of passengers embarking on sailing vessels or steamers, the arrangement of their accommodations, and the quantity of provisions on board for the probable length of voyage shall be determined by the particular regulations of different governments adopting this code. But in no case should the number of individuals to be accommodated on board any vessel, or in any apartment provided

for the accommodation of crew or passengers, exceed in ratio one individual to every four hundred cubic feet of air space, together with provision for effectual ventilation in all weathers.

57 17. Passenger vessels of whatever size, and all vessels carrying ~~sixty~~ persons, or a smaller number, including crew, shall furnish ~~themselves~~ ^{be} with the necessary medicines and apparatus for the treatment of the most ordinary diseases and accidents likely to happen on board. And it shall be the duty of the sanitary administration of each government to make out a catalogue of the medicines and apparatus, and detailed instructions for their use on board all vessels of this class.

18. All sea-going passenger vessels and all vessels having a larger number of persons on board than named in the last preceding article, shall carry a doctor of medicine, approved of by the sanitary authority.

19. Bills of health shall not hereafter be delivered until after the fulfilment of the regulations herein specified.

20. Vessels of the navy and revenue vessels shall not be subject to the preceding regulations.

21. In ordinary times, fishing-vessels, pilot-boats, vessels in the coasting trade, of the same country, and canal boats, need not carry a bill of health; the sanitary regulations of this class of vessels shall be determined by the local authorities.

22. No vessel shall have more than one bill of health.

23. Bills of health shall be delivered in the name of the local government by the sanitary authority, *viséd* by the consuls or commercial agents, and be of credit in the ports of all governments adopting this code.

24. The bill of health shall contain the name of the vessel, the name of the captain, or master, and the results of the examination, relating to the tonnage, merchandise, crew, and passengers; it shall state the exact sanitary condition of the place, the hygienic state of the ship, and whether there are any sick on board. In short, the bill shall contain all the information that can enlighten the sanitary authority of the port of destination, to give him as exact an idea as possible of the public health at the place of departure and environs; of the state of the ship, her cargo, the health of the crew and passengers. The environs are those places in habitual communication with the port of departure, and possessing the same sanitary relations. The bill of health for all parties adopting this code shall conform to the annexed model:—

BILL OF HEALTH.

Name of vessel.....
 Nature of vessel.....
 Flag.....
 Tonnage.....
 Guns.....
 Port of Registry.....
 Destination.....
 Name of Captain.....
 Name of Physician.....
 Equipage.—All complete..
 Passengers.....
 Cargo.....
 Hygienic state of ship....
 Hygienic state of Equipage,
 Cordage, Sails, etc.....
 Hygienic state of Passen-
 gers.....
 Food, Provisions, etc.....
 Water.....
 Disease on Board.....
 Sanitary state of place and
 environs.....
 and that.....

Delivered th
 18 at o'clock.

UNITED STATES OF AMERICA.

United States of America.

SANITARY REGULATIONS.

No.....
 BILL OF HEALTH.
 PORT OF

We of the Health Department in certify that the vessel hereinafter
 named, left this port in the following condition, namely:

Name of vessel..... Hygienic state of the ship.
 Nature of the vessel.....
 Flag.....
 Tonnage.....
 Guns.....
 Port of Registry.....
 Destination.....
 Name of Captain.....
 Name of Physician.....
 Equipage.—All Compl.....
 Passengers.....
 Cargo.....
 Disease on Board.....
 Hygienic state of Equipage,
 Cordage, Sails, etc.....
 Hygienic state of Passen-
 gers.....
 Food, Provisions, etc.....
 Water.....

We also certify that the Sanitary state of the place and environs and that

the
 In testimony of which we have delivered the present Bill of Health, at
 18 at o'clock.

(Signed.)
 [SEAL.]

25. Whenever there prevails at the place of departure, or in its environs, one of the three maladies reputed to be importable or transmissible, and when the sanitary authority shall have declared its existence, the bill shall give the date of the declaration. It shall give the date of the cessation of the same when the cessation shall have been established.

26. In conformity to the provisions of Article 6, the Bill of Health must be either *Clean* or *Gross*. The sanitary authority shall always pronounce upon the existence or nonexistence of disease at the port of departure. Doubtful cases shall be interpreted in the most prudent sense,—and the bill shall be gross. In regard to passengers, for those whose health may be suspected, the sanitary authority may demand the certificate of a doctor of medicine, known to him to be of good standing, and if any proposed passenger is thus found to be in a condition comprising the health of the ship or of persons on board, he shall, upon the direction of the sanitary authority, be prohibited.

27. Bills of Health can only be considered as valid when they have been delivered within the forty-eight hours last preceding departure. If the departure is delayed beyond this period, the bill must be *viséd* by the authority delivering it, stating whatever change may have taken place.

28. The existence of transmissible or importable disease in the quarantine establishment of any place shall not alone be considered cause sufficient for a *gross* bill of health.

II.—SANITARY MEASURES DURING THE VOYAGE.

29. All vessels at sea shall be kept in a good state of ventilation and cleanliness. And to this end it shall be the duty of the sanitary authority at the port of departure, to see that every vessel is provided with the necessary means, and that captains and masters are sufficiently conversant with the use of those means, for the purposes indicated.

30. Captains and masters shall conform to the instructions of the sanitary authority; otherwise, on arriving, they shall be considered as having a *gross* bill of health, and be treated accordingly.

31. Physicians attached to sea-going vessels shall be considered as the agents of the sanitary authority, and it shall be their special mission to watch the health of the crew and passengers, to see that the rules of hygiene are observed, and, on the arrival of the vessel, to give an account of the circumstances of the voyage. They must also keep an exact record of all circumstances of interest to the public health, meteorological observations, etc., and note with particular care the history and treatment of all the diseases and accidents that occur.

32. In vessels carrying no physician, it shall be the duty of the master or captain to fulfil, as far as practicable, the obligations of the last preceding article.

33. All captains or masters touching at or communicating with a port, shall have their bills of health *viséd* by the sanitary authority;

or, in default of such authority, by the delegated officer of the local police.

34. It is forbidden to the sanitary authority at the port where a vessel touches, or holds communication, to retain the bill of health given at the port of departure.

35. In cases of death at sea from a disease of a suspected character, the wearing apparel and bedding which have been used by the deceased in the course of his sickness, shall be burnt if the ship is at anchor; if *en route*, thrown into the sea, with the necessary precaution that they shall not float. Other articles belonging to the deceased shall be immediately aired or otherwise purified.

III. — SANITARY MEASURES ON ARRIVAL.

36. All vessels on arrival shall submit to an examination and questioning. The examination and questioning shall be made by the sanitary authority delegated for that purpose; and the result shall be recorded upon a special register.

37. All vessels, furnished with a clean bill of health, which have had during the voyage no disease or communication of a suspected nature, and which present a satisfactory hygienic condition, shall be admitted to free *pratique* immediately after examination.

38. There being no evidence that any disease was ever introduced into a community by persons who had been quite healthy during the voyage, and were so on arrival, such persons should not be detained under the apprehension that disease may be dormant in their systems. All well persons shall be allowed free *pratique*, excepting only the temporary delay provided in Article 4 for smallpox, immediately after arrival.

39. Whenever there are sick on board, they shall be removed as promptly as possible from the vessel to clean and airy rooms on shore, or to a floating hospital moored in a healthy situation. The detention of such persons in an infected ship is obviously most objectionable, and should be allowed under no circumstances whatever.

40. The experience of quarantine shows that the fears of pestilential disease being introduced by the ordinary cargoes of dry and imperishable goods is groundless, and that with the temporary exceptions hereinafter provided, such cargoes shall be admitted to free *pratique* immediately after examination. Nevertheless, there are numerous articles of commerce which should not be landed except under special restrictions, and apart from all populous neighborhoods.

41. The application of sanitary measures to merchandise shall be arranged in three classes: 1. Merchandise to be submitted to an obligatory quarantine and to purification; 2. Merchandise subject to an optional quarantine; and 3. Merchandise exempt from quarantine.

The 1st class comprises clothing, bedding, personal baggage and dunnage, rags, paper, paper-rags, hides, skins, feathers, hair, and all other remains of animals, woollens, and silks.

The 2d class comprehends cotton, linen, and hemp; and *cattle*.

The 3d class comprehends all merchandise not enumerated in the other two classes.

42. With a *gross bill* and existing quarantinable disease on board, or if there has been any such disease on board within the ten days last preceding, merchandise of the *first* class shall always be landed at the quarantine warehouse or other place provided, distant at least two miles from all populous neighborhoods, and there submitted to the necessary measures for purification. Merchandise of the *second* class may be admitted to free *pratique* immediately, or transferred to the warehouse, according to circumstances, at the option of the sanitary authority, with due regard to the sanitary regulations of the port. Merchandise of the *third* class shall be declared free and admitted without unnecessary delay.

43. In all cases of a gross bill, letters and papers shall be submitted to the usual purifications; but articles of merchandise, or other things not subject to purifying measures, in an envelope officially sealed, shall immediately be admitted to free *pratique*, whatever may be the bill of health. And if the envelope is of a substance considered as optional, its admission shall be equally optional.

44. A foul ship is much more to be dreaded, as a vehicle of introducing disease, than anything she has on board; and vessels in a filthy, unwholesome state, whether there has been sickness on board or not, should not be allowed to enter a crowded port, or to lie alongside a wharf or other ships, until they have been broken out, duly cleansed, and ventilated.

45. If a vessel, though furnished with a *clean* bill of health, and having had during the voyage no case of sickness, yet be found in a bad or infected state, or in a condition which the sanitary authority judges compromising to the public health, the vessel and cargo shall be detained until the case has been considered by the authority; his decision however, shall be rendered within twenty-four hours.

46. If in the judgment of the sanitary authority the vessel requires it, he may order the following hygienic measures: Baths and other bodily care for the *personnel*, washing or disinfecting means for clothing; displacement of merchandise, on board or a complete breaking out; subjection to high steam, incineration or submersion at a distance, in the sea, of infected articles; the destruction of tainted or spoiled food or beverages; the complete ejection of water; thorough cleansing of the hold, and the disinfection of the *well*; in short, the complete airing and ventilation of the vessel in all her parts, by the use of force-pumps, steam, fumigation, washing, rubbing, or scraping, and finally sending to an isolated anchorage ground. Whenever these divers operations are deemed necessary, they shall be executed in the more or less complete isolation of the vessel, according to circumstances, but always before admission to free *pratique*.

47. All vessels having no bill of health, which, by reason of the place from whence they came, could not obtain one, or in case of accidental loss of bill, shall submit to restrictions according to circumstances, depending upon the judgment of the sanitary authority, in conformity with the provisions herein established.

48. All bills showing evidence of erasure or alteration shall be con-

sidered null, and shall incur the conditions of the last preceding article, without prejudice to the proceedings which may be instituted against the authors of the alterations.

49. A doubtful case, reported in an unsatisfactory manner, shall always be interpreted in the most prudent sense. The vessel shall be provisionally detained.

50. Admission to free *pratique* shall be preceded by as many visits to the vessel as the sanitary authority may judge necessary.

51. No vessel can be put in quarantine, without a stated decision of the sanitary authority. The captain or master of the vessel shall be informed immediately after of this decision.

52. A vessel shall have the right, except when they have plague, yellow fever, or cholera on board, of putting to sea, in preference to being quarantined; and in the exercise of this right, if the vessel has not arrived at the port of destination, the bill of health shall be returned; the sanitary authority, however, shall mention upon such bill the length and circumstances of the detention, also the condition of the vessel on reputting to sea. But before the exercise of this right, the sanitary authority must assure himself that the sick will be taken care of for the remainder of the voyage; and take charge of such of the sick as prefer to remain.

53. Besides the specific measures in the foregoing regulations, the sanitary authority of each country or port has the right, according to Article 1, in the presence of immediate danger, to take the responsibility of applying such additional measures as may be deemed indispensable for the protection of public health.

54. Notwithstanding the preceding regulations, whenever the sanitary state is positively healthy, vessels going from one port to another in the same country can, in virtue of the particular sanitary regulations of each country, be freed from sanitary examinations. And, in ordinary times, by virtue of declarations exchanged between the contracting nations, all vessels, proceeding or intending to proceed from one of two countries to the ports of the other, may also be free from examination.

IV. — EXECUTIVE ARRANGEMENTS.

55. Every seaport town requiring the obligations of quarantine, should have a quarantine hospital for sick persons, warehouses for infected goods, with the necessary docks, and a designated anchorage ground for infected vessels; these several parts of the establishment shall be at such a distance and direction from each other, and all populous neighborhoods, infectious and infectable places, as to endanger the life of no one.

56. On the arrival of infected vessels at the quarantine establishment, all well persons shall be admitted to free *pratique* as soon as possibly consistent with the foregoing regulations; sick persons shall be immediately transferred to the quarantine hospital, or to hospital ships, and the vessel unladen as soon as practicable. All merchandise shall

be placed in capacious and perfectly secure warehouses, and there freely exposed to the air, and moved from time to time to insure its perfect ventilation.

57. Merchandise coming from different vessels and places in quarantine, at different times, shall be kept separate, and placed as much as possible in different warehouses.

58. Merchandise of the first class (Art. 41) shall be submitted to such measures of purification as the sanitary authority shall judge necessary. No putrefied animal or vegetable substances, or substances likely to putrefy, shall be admitted into the warehouses. All such substances shall be rendered innocuous or destroyed.

59. The clothes and dunnage of passengers contaminated with the infection of different diseases shall be exposed to ventilation in different places.

60. Each Quarantine establishment shall have one or more warehouses specially appropriated to the reception of purified merchandise, to which all merchandise may be removed so soon as it shall be deemed by the sanitary authority admissible to *pratique*.

61. Letters or dispatches shall be so purified that the writing may not be affected. Consuls and representatives of foreign countries have the right to be present at the opening and purification of letter-bags, or other mail packages addressed to them or designed for their country. Postmasters shall have the same right as consuls and foreign representatives.

62. All governments and places adopting this code shall as soon as practicable provide the necessary arrangements and appurtenances for fulfilling the obligations it imposes.

63. In case of the arrival of infected vessels at a port not provided with a quarantine establishment, vessels or hulks may be appropriated to the service of the sick, and also for the reception of merchandise; but in such cases they shall be disposed in such a manner as will permit the separation of the sick and assure the best conditions of hygiene, — especially ventilation. But under no circumstances whatever shall sick persons be kept in proximity with infected goods. Well persons shall have their liberties as soon as practicable, consistent with the preceding regulations; and all other measures essential for the protection of public health, shall be instituted according to the exigencies of the case, provided they are not inconsistent with the tenor and spirit of these regulations.

V.—SANITARY AUTHORITIES.

64. Sanitary authorities shall be established upon a uniform basis by the countries or governments adopting this code, and shall be composed: First, of a responsible agent of the government, who shall be a doctor of medicine; and, Second, of a local Sanitary Council or Board of Health.

In addition to the above Report, presuming it to be adopted, your Committee beg leave to offer the following resolutions:

1. *Resolved*, That this Report be referred back to the Committee,

with directions to negotiate with our National Government or Department of State, to secure, by convention or otherwise, the national and international adoption of a code based upon the principles hereinbefore set forth.

2. *Resolved*, That a committee of one from each State represented in this Convention be designated by the delegates of the several States, and appointed by the Chairman of the Convention, with power to confer with the governments of their respective States for the adoption of such code.*

3. *Resolved*, That the local sanitary authorities of the several States and municipalities in the United States be furnished with a copy of this Report, and that they are hereby respectfully requested to carry into effect all its *specific recommendations*, and the general provisions of the code, without waiting for their national and international adoption.

Respectfully submitted,

A. N. BELL, *Chairman* ;
ELISHA HARRIS,
WILSON JEWELL,
R. D. ARNOLD,†
H. G. CLARK.

* By vote of the Convention, it was Resolved, "That the Committee on External Hygiene have power and be directed to select a suitable person from each State, not represented in this Convention, to aid in carrying out the objects of the second resolution of their Report."—The following persons were appointed from the States represented: Gov. Emerson of Penn.; Dr. Gunn, N. Y.; Dr. Snow, R. I.; Dr. Moriarty, Mass.; Dr. J. A. Nichols, N. J.; Dr. G. B. Guthrie, Tenn.; Dr. Thompson, Ohio; Dr. Kemp, Md.

† It was voted, on motion of the Chairman of the Committee submitting the Report on External Hygiene, "that two additional members, appointed by the Chair, should be added to that Committee. Drs. R. D. Arnold and H. G. Clark were appointed.

BRIEF SUMMARY

ON THE IMPORTANCE OF ESTABLISHING AN INTERNATIONAL SYSTEM
OF QUARANTINE, BY DR. D. B. REID,* MADISON, WISCONSIN.

There are few civilized nations in which the progress of medical science has not led to important changes in the administration of quarantine. Discoveries in chemistry and mechanics, the power of heat, cold, ventilation, and disinfecting agents, and a better knowledge of the nature and characters of disease, have all tended to lessen the severity of the practice of former times, to remove restrictions on commerce, and to place increased resources in the hands of the practitioner in securing the right conduct of an efficient quarantine, wherever it may be necessary.

It has been a growing conviction with medical men, however, that too little attention is still paid to the condition of ships' cargoes, crews, and passengers at the port of embarkation, and that in consequence of this defect they often start with disease, or in a condition that leads to its development when they are at sea, that might have been prevented, or at least largely reduced. From this cause an unnecessary increase in the severity of quarantine restrictions, and consequently in the cost, becomes imperative at ports of arrival.

As it is manifest that health on board ship must depend essentially on the condition in which it leaves the port of embarkation, the conduct of the voyage, and the position in which it is placed at the port of arrival, it is impossible to do full justice to this question, or to secure those measures that the best protection against the production of disease, and the most effective modes of controlling it, unless the authorities, both at the port of embarkation and arrival, as well as those who direct the voyage at sea, shall concur in the necessary measures to do adequate justice to this question. Foreign governments must concur in lending their mutual aid to the solution of the principal problems it involves. A quarantine system is essentially a sanitary question; and the broader the basis on which it is founded, the greater the advantages attending it, and the more certain its success in improving the system and lightening the burdens attending it; and though it is only required between such nations as are engaged in commerce, and more especially within certain latitudes, the more cosmopolitan the character of any arrangements that may be entered into by treaty or otherwise, the more likely are they to be generally adopted, and to promote the preservation of health both at sea and on shore.

Such being the circumstances under which the attention of the Committee was directed to the subject under consideration, the author

* Dr. Reid was appointed a member of the Committee on External Hygiene, but owing to unavoidable causes he was unable to participate in the work of the Committee submitting the Report. His "Brief Summary" was received after the Report was made out.

A. N. BELL, *Chairman of the Committee.*

of the following summary has endeavored to place in the appended resolutions a scheme that may be rendered a general basis of action in leading commercial nations to a united effort for the promotion of this case. Twenty years have elapsed since he directed the execution of works for ships in warm climates, (the coast of Africa and the interior,) and he has since directed other works in different classes of ships, more especially during the prevalence of severe disease among British troops in China, and latterly at New York, in the construction of the Russian frigate, the *General Admiral*, in which his plans for ventilation were introduced. Since the meeting of the Sanitary Convention last year at New York, he has had a special opportunity of bringing this subject under the notice of one of the members of the Cabinet at London, the President of the Board of Trade, the Hon. Mr. Milner Gibson, the details previously submitted to His Excellency the President at Washington, and has received from another, the Rt. Hon. Lord John Russell to different embassies on both sides of the Atlantic to facilitate his proceedings on this question, though he desires to state explicitly that he has no authority nor right to connect the names of these parties with the resolutions that follow, which are brought forward on his own responsibility alone. But from the varied opportunities he has had of inquiry as to the points at issue, he entertains the conviction that their discussion has already been attended with the most important results, and that it requires only the continued co-operation of the medical profession to secure a proper attention to their importance, and to the improvement of the condition of the sailor and passenger at sea, as well as when detained on shore, and the removal of restrictions on commerce to the greatest degree compatible with the public health.

It is proposed accordingly, with every deference to the views of the Committee, that it recommend the following resolutions to the consideration of the Sanitary and Quarantine Convention to be held this year at Boston:—

I. That the objects contemplated by quarantine would be more effectually attained, and with less interference to commerce, individual comfort, and personal liberty, were an international system established, recognizing more fully than hitherto the importance of sanitary arrangements on board ship and at all ports, and by giving efficiency to this recognition by an adequate system of international laws, inspection, and local regulations.

II. That the medical and other authorities at quarantine stations should not only superintend the quarantine of vessels as they arrive, but also, with such assistance as may be suitable, give advice and directions that may assist in securing proper sanitary arrangements in vessels loading for special ports, and in maintaining them in action during the progress of the voyage.

III. That as modern science has developed numerous new resources for preventing and controlling disease, the physician in chief at quarantine, or other responsible medical authority, should, under prescribed regulations, have more power than is usually granted to him to

extend or relax the period or measures required for quarantine in individual cases.

IV. That with the view of facilitating the labors of the medical profession, and other authorities, in directing measures for the improvement of quarantine, all governments taking a practical interest in this question shall be invited to concur in providing a series of colored illustrations with explanatory letter-press in the English, French, Spanish, and German languages, presenting such information as to the sanitary improvement of ships and ports, as may assist in directing a more extended attention to these questions among all parties interested in them, including particularly the following subjects:—

- a. The ventilation of ships.
- b. The fumigation of ships.
- c. The warming, drying, and cooling of ships and cargoes.
- d. The best mode of destroying noxious refuse, or condemned goods, or clothing.
- e. The construction of steam tugs, especially in crowded seaports, having the means of placing the power of the whole or part of their machinery on the ventilation, fumigation, warming, cooling, or drying of ships, cargoes, or special materials.
- f. The introduction of similar resources in some ports by the aid of engines, fixed ventilating shafts or other machinery on shore, so that when a vessel is laid alongside an appropriate quay by proper connections with a tabular channel in the quay, more power may be brought to bear on the ship, crew, and passengers, or cargo, in half an hour, than can be secured under ordinary circumstances by any prolonged detention at quarantine without such resources.
- g. The construction of quarantine hospitals, with all the varied resources that can now be advantageously applied to them, whether afloat or on shore.

V. That the Sanitary and Quarantine Convention recommend the appointment of two or more members of the medical profession who shall have had practical experience at a quarantine station in the United States to communicate with the Federal Government at Washington on this subject, to urge its importance as the deliberate recommendation of the Convention, to suggest the meeting of a cosmopolitan assembly on quarantine in some city in Europe or the United States, to which the Federal Government shall be requested to send a representative.

VI. That inventors and others be invited to transmit models and drawings of all improvements for promoting health on board ship, in quarantine hospitals, and at quarantine stations, or on other matters connected with quarantine to this assembly.

D. B. REID.

MADISON, WISCONSIN, May 5, 1860.

National Quarantine and Sanitary Convention. 1860
National Library of Medicine
Bethesda, Maryland

Condition on Receipt: The volume was in an original cloth binding which was broken in places; it had been crudely repaired. Most of the pages were discolored, acidic, weak and brittle. A few pages had been repaired with pressure-sensitive tape.

Treatment Report: The pH was recorded before and after treatment: before 4.5, after 9.66. The inks were tested for solubility. The head and tail were dry cleaned and the pages were nonaqueously buffered (deacidified) with methoxy magnesium methyl carbonate

